

Bringing nature's value into decision making for public lands

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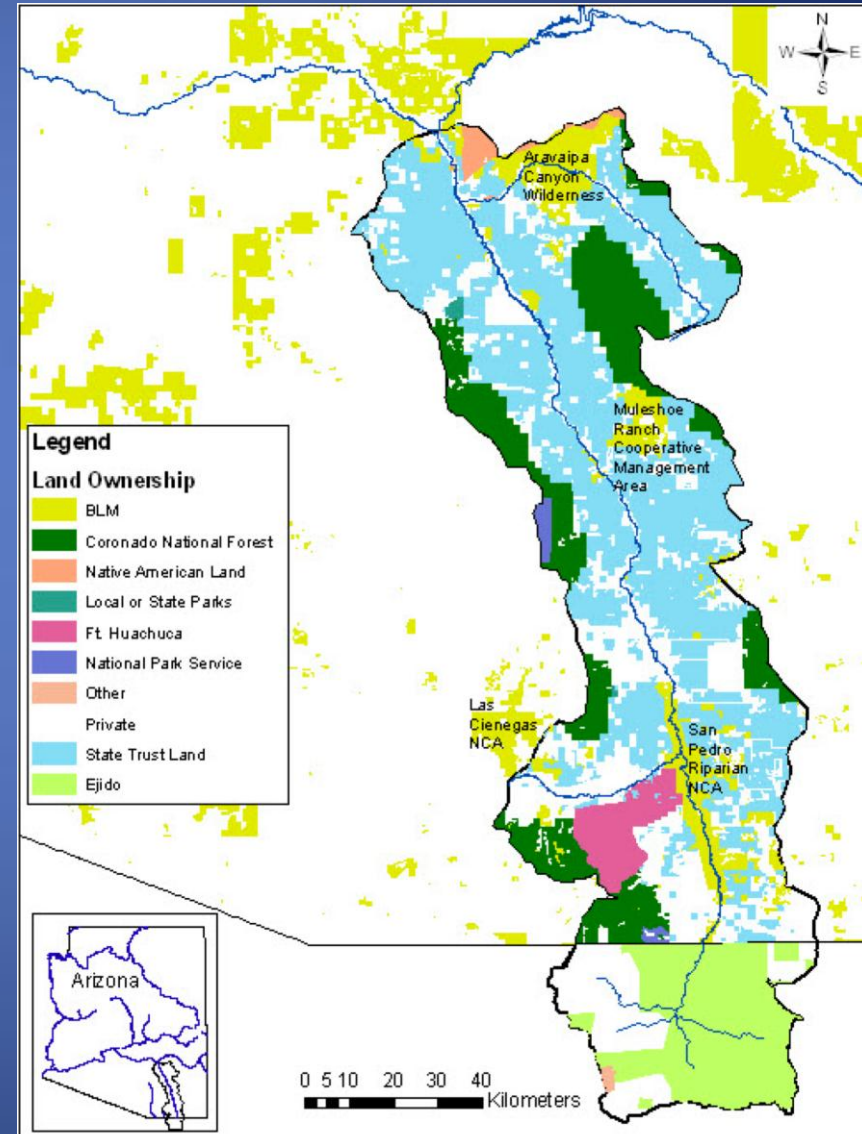
Partnerships

- USGS-BLM Ecosystem Services Valuation Pilot
 - Phase 1: SE Arizona
 - Phase 2: Utah, Master Leasing Program
- NPS: Support for for General Management Plans
- USDA Forest Service: Ecosystem services & social values in forest planning (Pike-San Isabel NF)
- CO State Land Board: Valuing Colorado's State Trust Lands

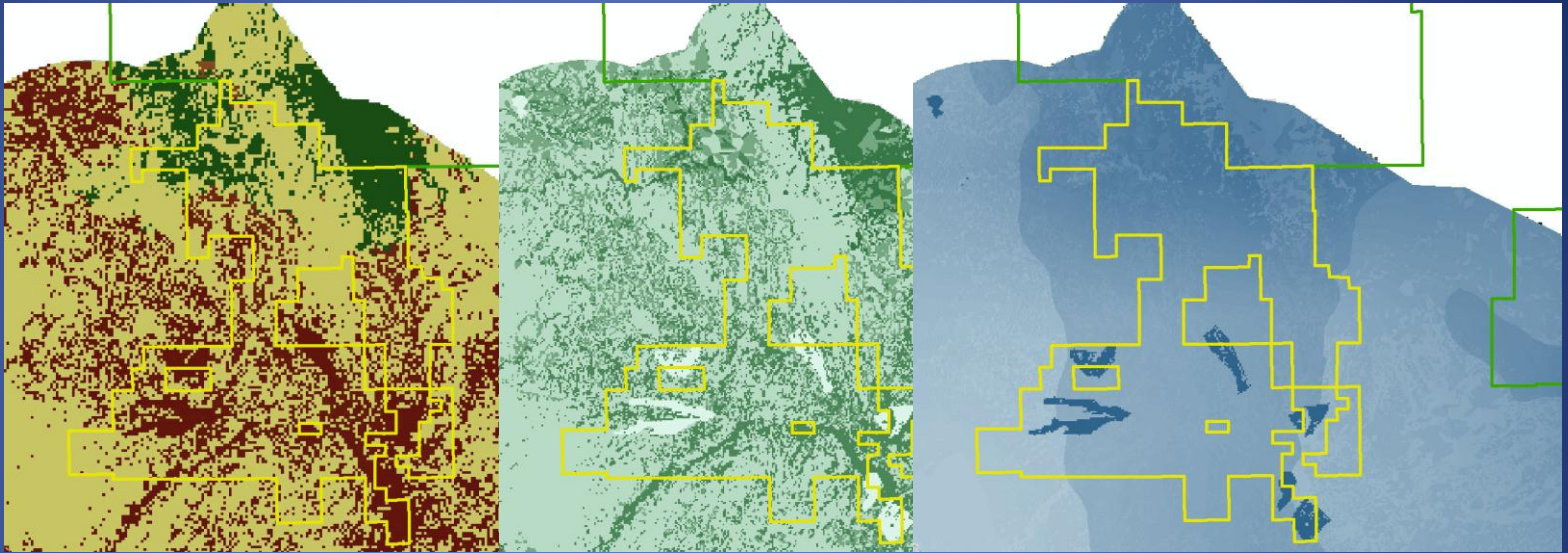


Case study: San Pedro River

- BLM: 3 conservation areas
- NPS: Coronado National Memorial, Saguaro National Park
- USFS: Coronado National Forest



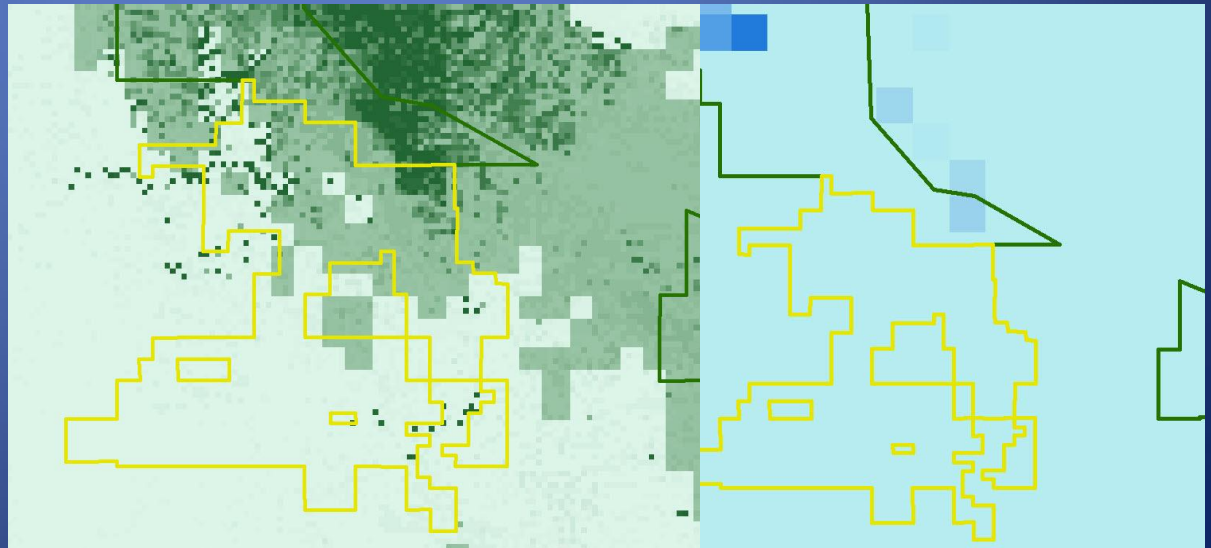
Values by protected area



Muleshoe Ranch CMA (BLM)

InVEST biodiversity, carbon
storage, water yield (top)

ARIES carbon sequestration,
scenic viewshed provision
(bottom)



Summary values

	Saguaro East	Coronado NM	Coronado NF	SPRNCA	Muleshoe Ranch	Aravaipa Canyon
InVEST carbon storage	\$2.31M	\$0.81M	\$33.6M	\$6.93M	\$2.51M	
ARIES carbon sequestration	\$0.31M	\$0.13M	\$14.6M	\$1.89M	\$1.05M	\$3.01M
InVEST biodiversity (abstract units)	3,182	1,211	41,370	11,422	3,356	
InVEST water yield (m ³)	\$5.29-8.49M	\$2.39-4.51M	\$96.08-176.45M	\$9.17-23.50M	\$9.91-13.05M	
ARIES groundwater recharge (m ³)	\$0.59M	\$0.20M	\$25.04M	\$4.30M	\$2.26M	\$6.00M
ARIES viewshed provision (abstract units)	883	15	2,514	255	0	100

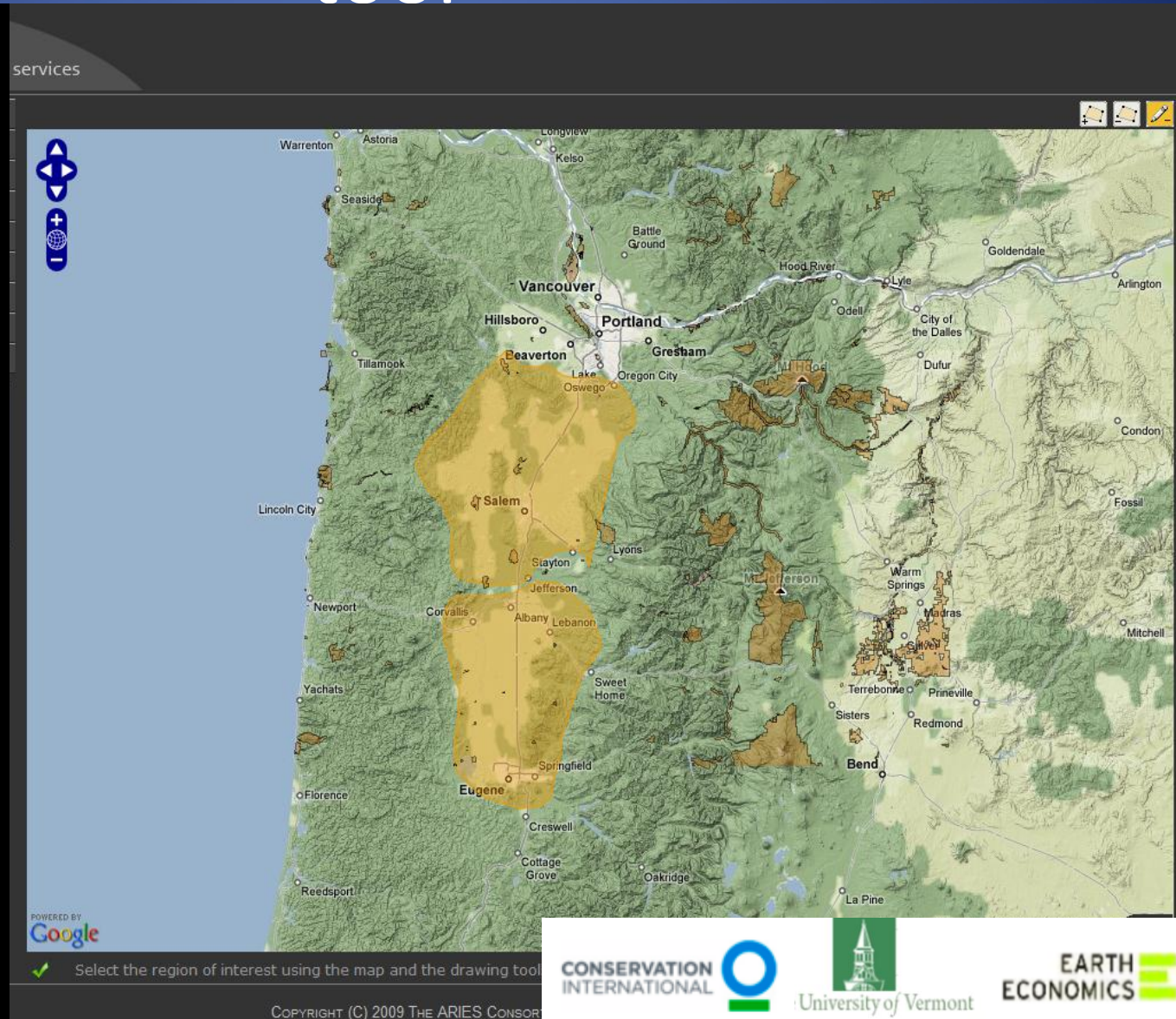
ARIES: A web-based ecosystem services tool

National Science Foundation-funded project now under ongoing development at USGS

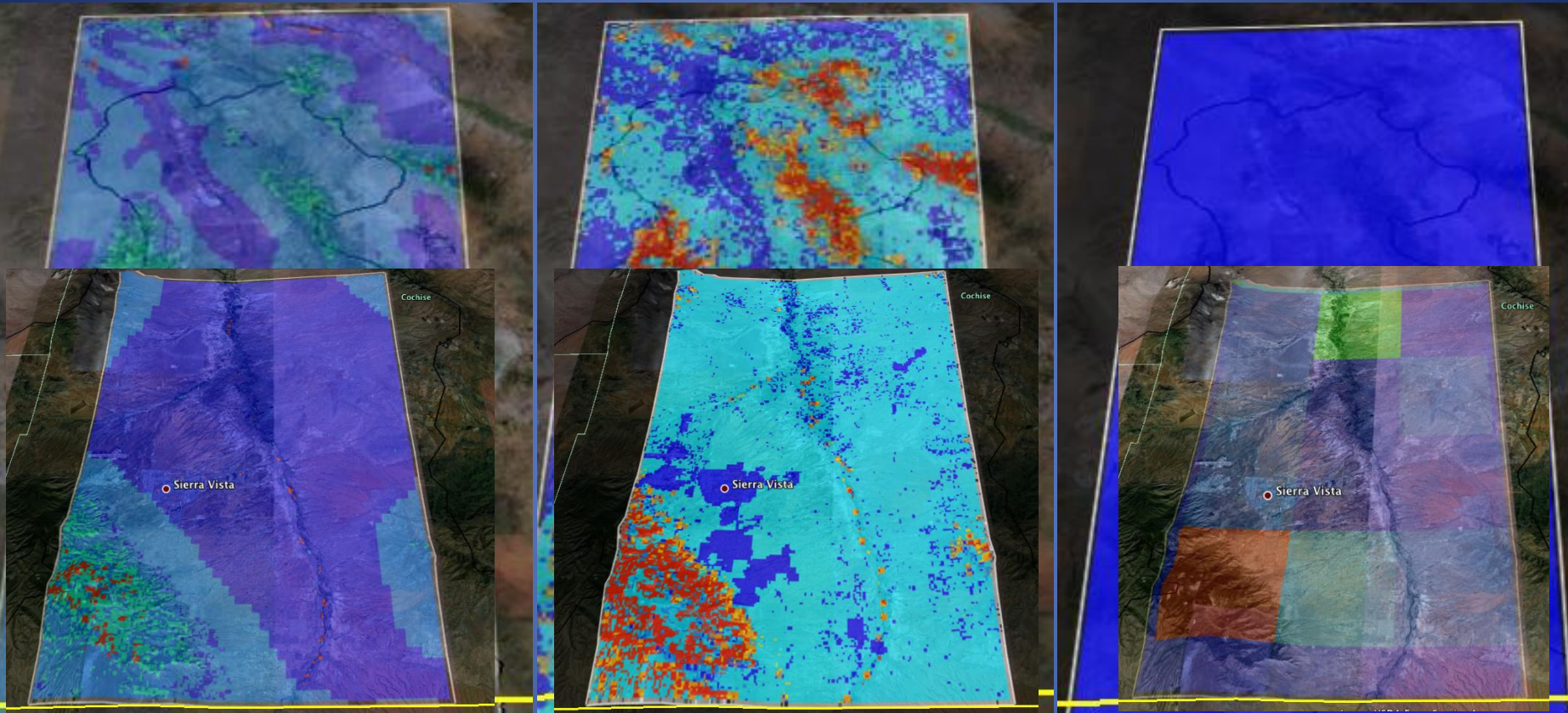
Interface through web browser (www.ariesonline.org)

Accounts for ecosystems that provide value and where people benefit from them

Reports uncertainty estimates, can work in regions with incomplete data



ARIES: mapping service supply & demand



Carbon sequestration

Potential stored carbon release

Greenhouse gas emissions

ARIES carbon results for San Pedro River, AZ

Online tool at <http://ariesonline.org> (Beta release Summer 2012)

SOLVES: Public Uses and Social Value Types



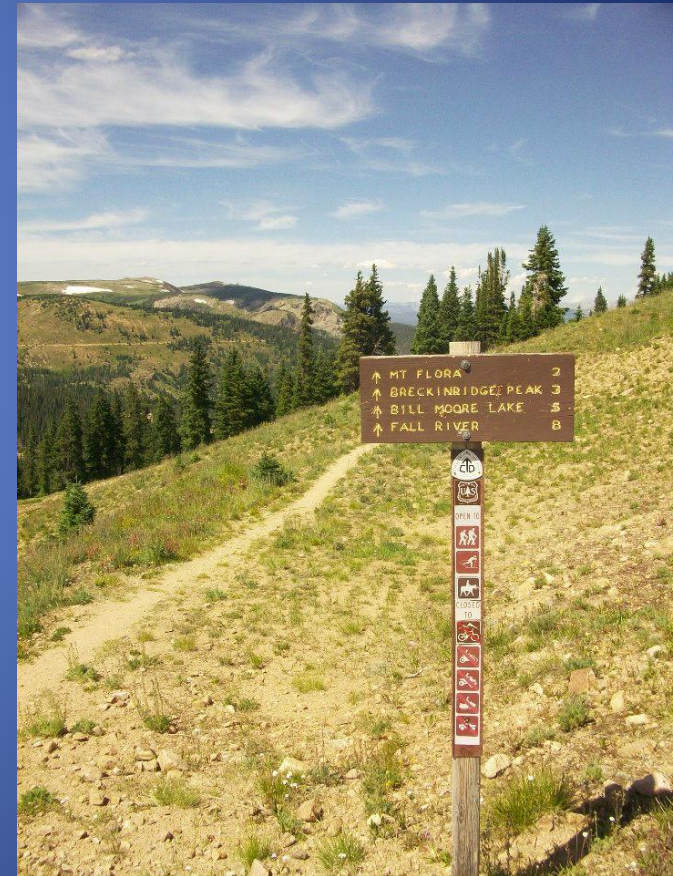
FAVOR
or
OPPOSE?



AESTHETIC
BIODIVERSITY
CULTURAL
ECONOMIC
FUTURE
HISTORIC
INTRINSIC
LEARNING
LIFE SUSTAINING
RECREATION
SPIRITUAL
THERAPEUTIC

Ecosystem services & social values in Colorado

- What areas are critical for providing:
 - 1) Water supply, carbon sequestration, sediment-free runoff to reservoirs, value of views to homeowners
 - 2) Social values
- What can hotspots & tradeoffs tell us about management synergies and potential conflicts?
- How could mountain pine beetle outbreaks and forest management strategies impact ecosystem services & public perceptions?



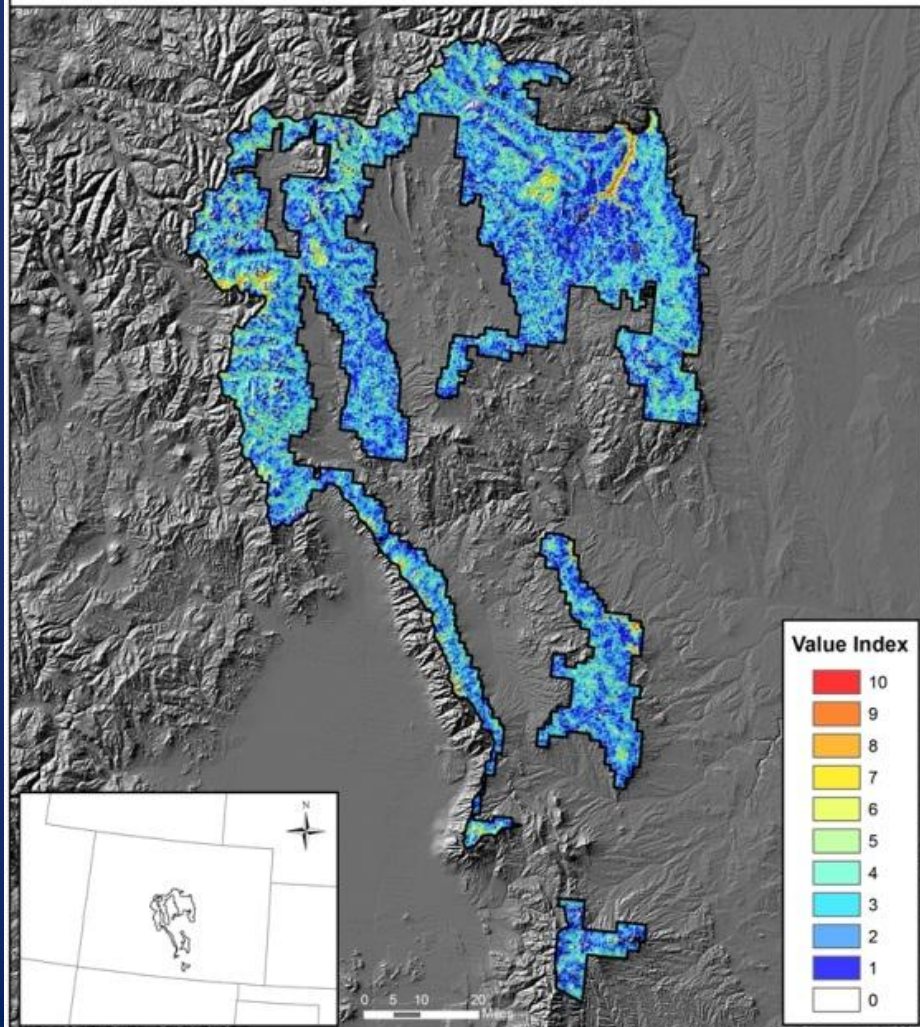
Putting it together: mapping service provision & social values

		Ecosystem service values (mapped using ARIES)	
		High ecosystem services	Low ecosystem services
Social values (mapped using SoIVES)	High social values	High support for management (if social values & services are compatible) OR potential conflict between management & traditional uses (if social values & services are not complimentary)	High support for traditional uses; cases where biophysical modeling alone is inadequate to map value
	Low social values	Public outreach needed to build support for management (e.g., for watershed protection programs)	Areas suitable for development or resource extraction, assuming other important natural or cultural resources are absent (e.g., high biodiversity, threatened & endangered species, Native American cultural significance)

Recreation values mapping with SolVES

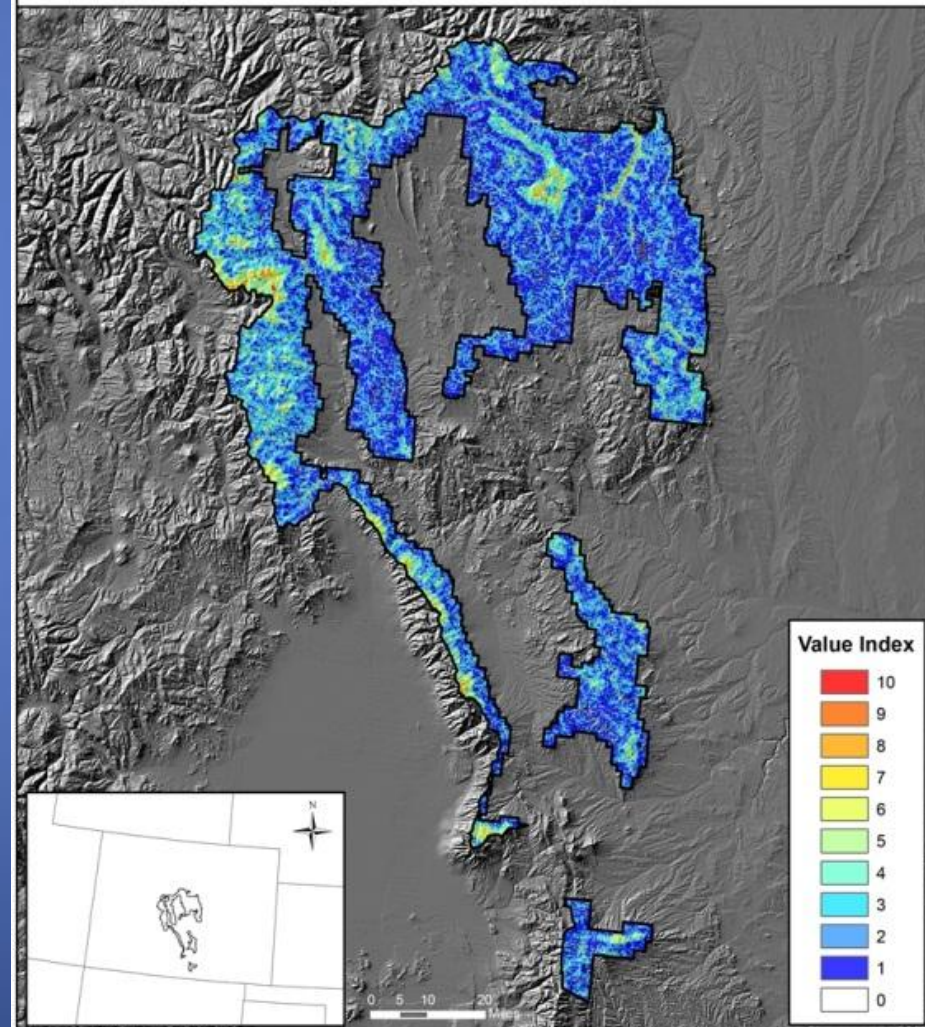
Pike and San Isabel National Forests, Colorado

Recreation Value for Survey Respondents
Favoring Motorized Recreation



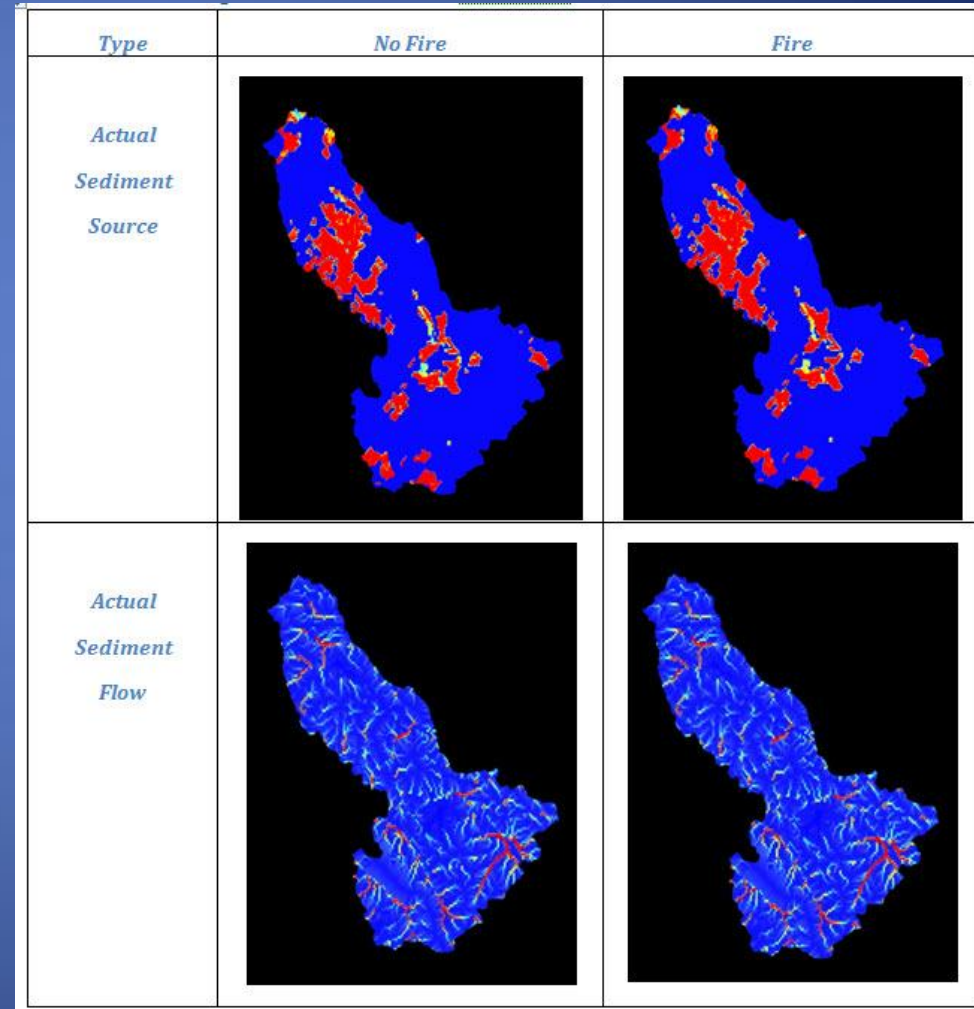
Pike and San Isabel National Forests, Colorado

Aesthetic Value for Survey Respondents
Opposing Motorized Recreation



Ecosystem services mapping in Colorado

- DU graduate-level geography course, Fall 2011:
 - Water supply
 - Carbon sequestration & storage
 - Sediment regulation
 - Scenic views
- Models currently being updated and tested





Thanks!

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